REMARKS

Claim Rejections Under 35 USC §112

Claims 4-7, 10 and 11 are rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Relevant claims have been amended, as needed, to overcome this rejection. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim Rejections - 35 U.S.C. §103

Claims 1 and 2 are rejected under 35 USC §103(a) as being unpatentable over the prior art in applicant's Fig. 3 in view of Hell et al. (U.S. Patent No. 6,262,423 B1).

Claims 3, 4 and 10 are rejected under 35 USC §103(a) as being unpatentable over the prior art in applicant's Fig. 3 in view of Ramm et al. (U.S. Patent No. 6,345,115 B1).

Claim 11 is rejected under 35 USC §103(a) as being unpatentable over the prior art in applicant's Fig. 3 in view of Hell et al. (U.S. Patent No. 6,262,423 B1), as applied to claims 1 and 2 above, and further in view of Ramm et al. (U.S. Patent No. 6,345,115 B1).

Regarding Hell's invention, Hell's biochip reader is a two-photon excitation scanning microscope designed to obtain sliced images from a three-dimensional cell or the like. Therefore, it is not a biochip reader using microlenses such as the one described in the present application.

It should be noted that Hell's invention does not refer to any incident angle, the scanning microscope of Hell's invention does not have the capability to measure samples at such high sensitivity levels as in the case of the biochip reader of the present application. Consequently, the

biochip reader of the present application is patentably distinguished over Hell and is not taught or suggested by Hell.

Regarding Ramm's invention, although the digital imaging system of Ramm's invention is a telecentric system, light enters the telecentric lens as parallel rays since the incident angle of the light is zero. This means the light only results in a dot on an image plane such as a CD, thus providing no images.

To be able to provide images, such incident angles as mentioned in the present application are required. Too large an incident angle, however, will let the excitation light also pass through the image-forming lens along the fluorescent light. For this reason, the value ±5° mentioned in context with the incident angles in the present application is of great significance. Ramm fails to define incident angles that makes providing images possible.

Ramm's invention also does not refer to any parts midway through the optical system. This is especially true with Fig. 3 of the reference cited from Ramm's invention, which only illustrates the fact that rays of light must be entered perpendicular to the fiber optic plate. This figure thus has no relevance to the statement made in column 14, lines 2-7 to the effect of "the incident angel being at 0 degrees." Consequently, the biochip reader claimed in the present application is not taught or suggested in Ramm.

In rejecting the claimed invention, the outstanding Office action has numerously asserted the Applicant admitted prior art in Figure 3 as the primary reference. Supplemental to the shortcomings of the primary reference are numerous secondary references.

Regarding Figure 3 of the Applicant admitted prior art, page 2 line 13 to page 13 line 11 of the written specification has specifically stated that:

> "in such conventional biochip readers, if shading (cone-shaped light intensity distribution) is included in excitation light from the light source, non-uniformity is generated in read data. To prevent this, it is suggested to make the ratio α of the minimum value of light intensity to its maximum value 10 to 20%, by making the amount of shading small using only a center portion of the above conical intensity distribution as shown in FIG. 3. However, there occurs another problem that much light is wasted (the light-utilizing efficiency deteriorates) because this method discards light in the peripheral portion.
>
> Furthermore, if the expression of mRNA in a biochip is to be measured using cDNA, there are large differences in the amounts of expression, which causes problems such as cases where a 10- to 100-fold difference exists as shown in FIG. 4 (b) between the expression (signal intensity) of gene A and that of gene B shown in FIG. 4 (a). That is, if the amount of expression is to be measured precisely without giving any change, analog-to-digital converters and amplifiers used in the detector must have wide dynamic ranges and high accuracy, and so are expensive. This is a problem.
>
> In addition, there is another problem that, although there is a method to measure the amount of expression several times by changing the gains of analog-to-digital converters and amplifiers, this method takes time for measurement, and dispersion in measured values and discoloring of biochips also increase."

Therefore, it is very clear that Figure 3 of the Applicant admitted prior art has such shortcomings as non-uniformity being generated in read data, light being discarded in the peripheral portion, large differences in the amounts of expression causing a problem of either a ten fold or hundred fold difference in signal intensity, technical requirement of requiring A/D converters with wide dynamic ranges, requiring repeated reading of a biochip, dispersion in measured values and discoloring of biochips.

In the numerous secondary references, there are on offerings of how the shortcomings of the primary reference can be overcome. Therefore, even if the primary reference and the secondary references are combined, exactly as suggested in the Office action, these same shortcomings continue to exist.

Section 2143 of the MPEP has specifically stated that:

> "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claimed limitations. The teaching or suggestion to make the claimed

> combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 466, 20 USPQ2d 1438 (Fed. Cir. 1991)."

Therefore, it is both a court position and a Patent Office position that to establish a *prima facie* case of obviousness, 1) there **must be** some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; 2) there **must be** a reasonable expectation of success; and 3) the teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be** found in the prior art, and not based on applicant's disclosure.

Given that the numerous shortcomings of the primary reference cannot be solved, the same shortcomings continue to exist even after the secondary references are combined therewith. Therefore, the "there must be a reasonable expectation of success" requirement and "the teaching or suggestion to make the claimed combination and the reasonable expectation of success **must both be** found in the prior art" requirement of establishing a *prima facie* case of obviousness are not met.

Therefore, should the Office either be unable to identified each and every aspect of the above-mentioned claimed features after taking full consideration of the asserted prior art in a way exactly applied in the outstanding Office action, or the Office recognizes that the rejection simply does not arise to a level objectively fulfilling all three criteria of establishing a *prima facie* case of obviousness, it is respectfully submitted that the obviousness rejection is defective and allowance of the claimed invention is requested.

Prior Art Indicated To Be Pertinent To The Disclosure

The Office has provided a list of prior art indicated to be pertinent to the Applicant's invention. Consistent with the understanding as stipulated in MPEP 706.02 that only the best prior art should be applied, this list of prior art not having been applied by the Office, it is the Applicant=s understanding that the Office must have considered the listed prior art to be no more pertinent than the applied prior art of record.

CONCLUSION

In view of the aforementioned amendments and accompanying remarks, all pending claims are believed to be in condition for allowance, which action, at an early date, is requested.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 50-2866.

Respectfully Submitted,

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